

USC Medical Team to Study Effects of Smog

How does smog affect our breathing?
The University of Southern California School of Medicine this month launches a United States Public Health Service-sponsored study of chest patients at Los Angeles County General Hospital Medical Center to find answers to this question.

Two stumbling blocks inhibit such research on man, according to Dr. Oscar J. Balchum, associate professor of medicine at USC and a member of the LACGH attending staff. He is principal investigator on the project with co-investigator Dr. Hyman W. Gerson, chief of the hospital chest

service and assistant clinical professor of medicine.
ONE PROBLEM is the difficulty of isolating the similar effects of four pulmonary trouble-makers: smoking, respiratory infections, industrial dust and fumes, and air pollution (smog). The other is the difficulty of measuring minute

changes in breathing ability with present test equipment. "Our approach is unique as far as I know," said Dr. Balchum. "We will control and analyze the air breathed over a period of several weeks and will conduct our studies with volunteer patients suffering from chronic respiratory diseases. These patients," he ex-

plained, "are probably more sensitive to air pollutants than normal individuals. They are the first victims of so-called 'killer smogs'."
UNDER A GRANT from the Air Pollution Division of the USPHS, preparation for the study began in July, 1962. Known informally as The Fil-

tered Room Project, the study is officially titled "Respiratory Effects of the Microenvironment in Man."
This is the second major assault on smog undertaken recently by the USC School of Medicine. In Feb., 1962, the five-year USC-USPHS Air Pollution Animal Exposure Study began examining the effects of

smog on 6,000 small rodents at four Los Angeles area test sites. Studies being made include cancer, pulmonary function, blood gases, and plasma and tissue enzymes.
Dr. Hurley L. Motley, professor of medicine at USC, has been investigating effects of air pollution on humans since 1955 as director of the USC

Cardio-Respiratory Laboratory at Good Samaritan Hospital, Los Angeles.
FOR THE NEW study, two rooms on the 11th floor of the Acute Unit at General Hospital, where the school of Medicine does its clinical teaching and treats patients, have been specially equipped, each accommodating four patients at a time. The rooms may be supplied with smoggy outdoor air or with purified air. Smoggy air will be monitored for its gas and particle content.

During the anticipated 18-month life of the project, some 100 patients, mainly emphysema sufferers, will be studied. They will receive regular medical care plus special pulmonary examinations and tests. A patient will live for one to two weeks in each atmosphere, receiving tests in each, thus serving as his own control. Results will be correlated with the recorded pollutant content of the air. Interchangeability of atmosphere is designed to minimize psychological factors which might influence results. Patients will not be told which type of air they are breathing.

"WE ANTICIPATE," said Dr. Balchum, "that it will take two or three days in a new environment before measurable changes show up."
Dr. K. Ronald Smith, USPHS physician and a member of the LACGH attending staff will examine each patient for symptoms such as coughs, sputum, and shortness of breath and will listen to his chest for any physical findings which may indicate irritation or difficulty in breathing. He will also supervise breathing tests to measure any changes in the patient's ability to ventilate his lungs.

The ambient air will be measured 24 hours a day for concentration of carbon monoxide, nitrogen dioxide, nitric oxide, and oxidants. Size and number of particles in the air will be recorded.
Bacteriological tests to determine the type and number of bacteria in patients' sputum as well as the type and number of bacteria in both the smoggy and filtered air will be made under Dr. Paul F. Wehrle, professor of infectious diseases and pediatrics, and Dr. Daniel Ivler, associate professor of medical microbiology.

"ONE OF OUR concerns in the project," Dr. Balchum stated, "is the possibility that life-long exposure to respiratory irritants may cause some individuals to develop chronic respiratory disease. In the past 10 years there has been a marked increase in such conditions, particularly emphysema. This disease," he explained, "is characterized by cough, production of phlegm, and then shortness of breath which becomes progressively worse until activity is severely restricted and sometimes mechanical aids are necessary for continued breathing. Today, he said, "more people suffer from emphysema than from lung cancer and tuberculosis combined."

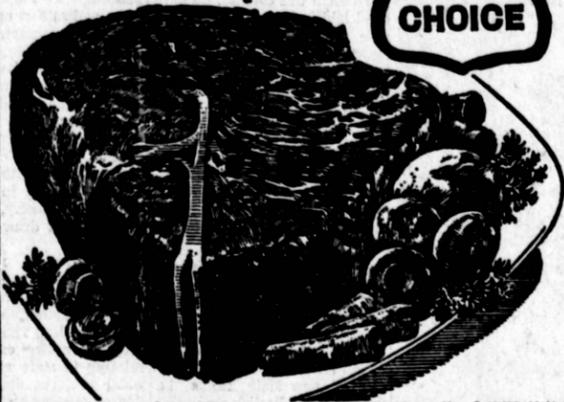
AN EARLY result of the study, according to Dr. Balchum, may be a re-evaluation of pulmonary test equipment. "It is likely that we may have to develop new and more sensitive methods of measurement," he said.
The project will employ three full-time research assistants, a secretary, and an assistant to aid in handling data.



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